

DOCUMENT RESUME

ED 113 280

SO 008 687

TITLE Report of the Science Curriculum Implementation Review Group to the Chairman, Committee on Science and Technology, U.S. House of Representatives.

SPONS AGENCY Congress of the U.S., Washington, D.C. House Committee on Science and Technology.

PUB DATE 1 Oct 75

NOTE 32p.; For a related document, see SO 008 688

EDRS PRICE MF-\$0.76 HC-\$1.95 Plus Postage

DESCRIPTORS Anthropology; Community Attitudes; *Curriculum Development; *Curriculum Evaluation; Curriculum Problems; Elementary Secondary Education; Evaluation Needs; Income; Moral Issues; Nature Nurture Controversy; *Policy Formation; *Program Administration; *Projects; Social Sciences; Social Studies

IDENTIFIERS MACOS; Man A Course of Study; *National Science Foundation

ABSTRACT

This report is a study of the science curriculum implementation policy of the National Science Foundation (NSF) with particular reference to "Man: A Course of Study" (MACOS). It includes the majority opinion of the ad hoc research group conducting the study and the minority opinion of one dissenting member. The majority views recommend that NSF continue precollege science curriculum activities, with the following changes: NSF and Congress responsibility for quality and content of curricula funded by NSF; creation of an ongoing needs assessment program to guide curriculum activities; addition of representative parents to curriculum reviewing and evaluating groups, especially for social science curriculum; complete and clearer policies in all NSF curriculum efforts; formal adoption of acknowledgment and disclaimer statements; and clear Congressional policy on royalty income and disposition. Regarding MACOS, the group recommends early phaseout and termination of MACOS implementation activities, renegotiation of publishing and royalty agreements, inclusion of acknowledgment and disclaimer clauses, insertion of cautionary statements to teachers, and encouragement of arranging parent previewing sessions and making the course optional. The minority view is that Congress should require NSF to discontinue its support of all course curriculum and development. (Author/ND)

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Ad Hoc
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October 1, 1975

NOV 10 1975

The Honorable Olin E. Teague, Chairman
Committee on Science and Technology
U. S. House of Representatives
Washington, D. C. 20515

Dear Mr. Chairman:

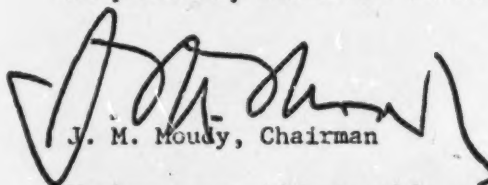
Herewith the report of the Science Curriculum Implementation Review Group.

In your appointment letter of April 22, 1975, you instructed us "to conduct a study of the science curriculum implementation policy of the National Science Foundation," with particular reference to "Man: A Course of Study," commonly called "MACOS."

Our report is offered in two parts, recommendations and commentary. It is signed by all but one of the members of the review group, as noted below. That member will soon send you a dissenting report.

Members of the group have been pleased to be of service to your committee and we respectfully suggest that we be discharged if our report proves adequate for its intended purpose.

Respectfully submitted on behalf of the group,



J. M. Moudy, Chairman

Members assenting to this report:

Edith Green, Oregon
Elam K. Hertzler, District of Columbia
J. M. Moudy, Texas
Rocco A. Petrone, District of Columbia
Gerard Piel, New York
Clare W. Schweickart, Virginia
James H. Zumberge, Nebraska/Texas

Member dissenting from this report:

Joanne McAuley, Texas

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Report of the
Science Curriculum Implementation Review Group
to the
Chairman, Committee on Science and Technology
U. S. House of Representatives
October 1, 1975

Recommendations

I. With regard to course development and implementation, the Review Group recommends that the NSF continue pre-college science curriculum activities¹ with the following changes in understandings and procedures:

A. Recognition that the NSF and the Congress cannot avoid responsibility² for both quality and content of curricula that are federally funded through NSF.

B. Creation of an ongoing needs assessment program that will guide future NSF science curriculum activities.

C. Addition of representative parents to curriculum reviewing and evaluating groups during curriculum pilot-testing periods and all subsequent periods of federal funding, especially in the case of social science curricula.

D. Development of and adherence to complete and clearer policies in all NSF curriculum efforts, including but not confined to: (1) closer monitoring by staff; (2) better evaluation by staff and outside groups; (3) time schedules for support and subsequent phase-out of each NSF implementation effort; (4) consistent and no-favoritism policies covering curriculum promotion, marketing, and publication and (5) avoidance, in implementation activities, of undue influence, direct or indirect, over local decisions on curriculum adoption.

E. Formal adoption by NSF of acknowledgment and disclaimer statements, and enforcement of same.

F. Establishment of a clear Congressional policy on all royalty income and its disposition.

II. With regard to MACOS in particular, the Review Group recommends:

A. Early phase-out and termination of MACOS implementation activities by NSF, except for regular processes of information dissemination and training programs in which more than a single curriculum is offered.

B. Renegotiation of the MACOS publishing and royalty agreement.

¹The review group was not unanimous on this point. Two members felt that the NSF should confine its curriculum work to the natural sciences and mathematics, leaving the social sciences to others. One member felt the NSF should stay out of curriculum entirely.

²Just how Congress should exercise its responsibility is discussed later. See also Addendum.

C. Requirement that acknowledgment and disclaimer clauses be included in all MACOS materials sold after a mutually-agreed upon date.

D. Insertion in all MACOS teacher materials of statements cautioning teachers regarding their handling of cultural differences and contrasting value systems, with careful attention to honoring the diverse value systems of the homes from which their pupils come.

E. Consideration by MACOS publishers of ways of enlarging their efforts to urge adopting school systems to (1) arrange parent previewing sessions to acquaint them with the course, and (2) make the course optional for students.

Commentary

The National Science Foundation set up its first organizational unit to consider proposals for science curriculum development in 1957, seven years after its 1950 establishment by Congress. Administrative processes developed originally by the Foundation in connection with the funding of unsolicited scientific research proposals were used with some modification as the Foundation, in partial response to post-Sputnik pressures, began also to concern itself with college and pre-college science education.

The first such proposal funded by NSF was in high school physics. It was so successful as to start a revolution in science education. While this work, like NSF's first emphasis, scientific research, centered in the natural sciences and mathematics, the NSF subsequently affirmed that the social sciences also are its concern and the nation's. While NSF acknowledges that the social sciences are not yet capable of the precision of the "hard" sciences, the Foundation takes the view that every field of study that can utilize the scientific method and the observation of cause and effect is a "science," a view shared by perhaps most of the members of the scientific community. Thus the NSF began also to fund social science projects, including social science curriculum development projects.

In funding science curriculum projects, the Foundation soon encountered the need for helping to propagate or "implement" each curriculum that survived pilot-testing and offered promise of success. There had been no previous parallel of this need in the Foundation's funding of scientific research. In the case of research grants, the scholarly results almost always would in time appear in appropriate scientific journals, there to receive the scrutiny and critique of the entire profession. The nearest approximation in the case of curriculum development would be the "market" and the willingness of an experienced commercial publisher to take the risks of publication, inventory, selling, and possibly to profit if the curriculum could be sold to school boards and administrators. But because the market, as represented by the established curricula in the schools and, more importantly, by the preparation of their teachers, had lagged far behind the accelerating advance of science, the NSF found it advisable to commit large additional funding to "implementation" in order to assure the best return upon the thousands and then millions of dollars it was investing in the development of science curricula. Most of this funding has gone to the support of "teachers institutes," organized by universities and colleges, at which teachers are introduced to new curricula in a given field and updated in their comprehension. Curricula presented in these institutes included not only NSF-funded materials but also new curricula produced by the textbook industry. Typically, the dollar amount of funds expended in NSF implementation efforts came to exceed by far the amounts expended in actually developing the curricula.

One of the social science curricula developed and implemented by the NSF over a

period of about 15 years is "Man: A Course of Study," better known as MACOS. Its principal architect was Jerome Bruner, to whom is attributed the three questions toward which the course intends to move:

What is human about human beings?

How did they get that way?

How can they be made more so?

To lead up to these questions concerning humanness, the course deals first with certain lower forms of life--the salmon, which develops from its egg without any parental contribution except implanted instinct; the herring gull, the young of which depend upon their parents for food and other assistance; the baboon, the young of which are dependent upon their mothers and other members of the troop in almost every way for a long time--and then the course moves to the human group known as the Netsiliks, a tiny, recent but now altered culture or community of eskimos in Canada. They were encountered by the explorer Knud Rasmussen in travels during 1924. The Netsiliks, described in Rasmussen's journal, were chosen after a consideration of other possibilities.

The presentation of materials in MACOS is achieved through a series of attractive student booklets, through a series of extraordinary color films offered almost without any narration so that the observer can better utilize his own thoughts, through supplementary film strips, and through an extensive series of teacher manuals.

MACOS is undoubtedly an extremely powerful course. As with any powerful tool, there exist possibilities for advantageous use and for misuse. Recognizing this latter possibility, the developers of MACOS went beyond normal procedures and established the requirement that MACOS could only be taught by persons who had completed specific training for the teaching of the course. This requirement increased greatly the prospective cost of installing the course in a school and became a financial hazard to prospective publishers and marketers.

While MACOS in its earlier stages of development was thought to be a course that could be taught at any level, it was decided that the course would be pointed toward fifth graders.³ For 10- and 11-year olds, some of the Netsilik solutions to what to do when their always-near-marginal food sources disappeared could be traumatic, especially if the pupils were inadequately guided by their teachers. The hard choices the Netsiliks faced sometimes dictated that the groups must move on to search for food even if this meant leaving behind an aged person unable to travel (senilicide), or to abandon a female infant who could not be as potentially productive in food supply as a male and who was one too many mouths to feed (infanticide). The near-absolute need of a Netsilik male for a wife to fill out the partnership of tasks in which each was utterly dependent upon the other for completion sometimes led to wife-lending or even wife-stealing. These Netsilik predicaments raise intense moral questions which could prove upsetting to 10- and 11-year olds even if supervised by an extraordinarily perceptive teacher. To make the learning impact even more pronounced and to lead to the development of the truly probing mind, pupils are expected to engage in role-playing in the Netsilik predicaments and to debate whether the old person should be left behind, whether the female child should be exposed to the elements, etc. Meanwhile, the teacher is mandated by the course to treat all questions as "open-ended," to help students come to their own

³Several members of the review group question whether MACOS is correctly targeted as a course for fifth-graders.

conclusions, and never to suggest how students should think on any particular issue-- a procedure and an implied philosophy questioned by several members of the review group.

After three years of pilot-testing in a hundred schools across the country, MACOS went into full commercial production in 1970, with especially favorable assistance by the NSF. It reportedly has been used in at least 1,700 schools in 47 states and several other English-speaking countries.⁴ Meanwhile, voices of protest, which were raised even while MACOS was in its pilot-testing period and when the course contained elements that were taken out before the 1970 commercial edition appeared, grew to sufficient levels to receive notice in the press and on television and in the halls of Congress. (As this report goes to press we are told, on the one hand, that sales of MACOS materials have plummeted, possibly due to the increase in criticism, and on the other hand, that the course has now been approved for adoption in the state of California.)

In response to protests, chiefly regarding MACOS but in part regarding certain other NSF-funded curricula now coming into use, the U.S. House of Representatives recently voted to delete funding of NSF curriculum implementation for FY 1976 with the understanding that a special review group would be appointed to advise the House. As appointed, the group consisted of a former Congresswoman, a science magazine and textbook publisher, an assistant to the U. S. Commissioner of Education, an engineer and former NASA official, two housewives and mothers, and two university chancellors, one of whom served as chairman.

Our review group held meetings in May, June, and July. We heard and conversed with the Director of the NSF, with some of his designated associates, with one person representing a citizens group opposed to MACOS, and with representatives of the group that developed MACOS and still is responsible for it. We viewed the MACOS films and read the extensive pupil and teacher materials that make up the course. Some of our number sought the views of interested persons in their home communities and/or in the scientific and professional education communities; they brought in testimony to the controversy from opponents and proponents. And we have seen copies of numerous critical articles that have appeared in the press.

Our review group has been made aware of a special internal study conducted and concluded recently by the National Science Foundation and a still-continuing study by the General Accounting Office. We have had the advantage of oral presentations regarding NSF's internal report and of seeing the final printing. It is entitled: "Pre-College Science Curriculum Activities of the National Science Foundation, Report of Science Curriculum Review Team, May 1975, Volumes I and II." However, we have not seen the final draft of the GAO report, though we received an oral briefing, at our request, by members of the GAO team.

We note with considerable satisfaction that some of the findings of the NSF internal review are similar to our own recommendations. It was our decision, however, not to attempt to reference these similarities in our report but to proceed to display our full set of recommendations.

The following commentary sections are numbered to match the recommendations listed above.

IA. Characteristically, the NSF has not sought proposals. Rather, it has operated in the response mode. Proposals come to it unsolicited. These are subjected to peer

⁴Perspective: MACOS has reached 1 or 2 percent of U.S. students at a cost of \$6. million for development and implementation.

review, following which some are approved and funded by NSF. Toward grantees and contractors the Foundation has maintained a "hands off" policy. Once a proposal to NSF has met the test of peer review and the award made, the NSF has felt it inappropriate to look over the shoulder of the researcher or the project director. This attitude stems from traditional university attitudes of academic freedom and mutual trust. Thus, except for a final report and possibly earlier interim reports, and except for financial accountability, the NSF does not attempt to guide an approved project. This positive attitude has a negative corollary, namely, that the NSF does not acknowledge responsibility for the result. Our review group feels that this attitude must be amended, or at least that responsibility must be acknowledged in more acceptable ways. We believe that the NSF must hold its grantees and contractors accountable, that the National Science Board must hold the NSF Director and his staff accountable, that the Congress must hold the National Science Foundation accountable, and that the electorate must hold the Congress accountable. Thus we say that "the Congress and NSF cannot avoid responsibility. In the case of NSF-funded curricula efforts we believe that this accountability extends to the quality and the content of results. However, all members share equally the concern that these responsibilities and accountabilities be exercised in appropriate ways. Our members were unanimous that neither the Congress nor the NSF should attempt to dictate what is taught and where, and that neither should attempt to censor materials. Rather, both of these bodies must labor unremittingly in the attempt to preserve inviolate the right of state and local decision-making in education, lest additional threats of monolithic federal force be unleashed. Thus the Congress should not attempt to make decisions which it has not time to make and which the NSF and other bodies can and should make. Afterward, if the Congress feels wrong decisions were made, then it is appropriate for Congress to call the NSF to account.⁵

IB. Up to the present the NSF has purposely kept itself to the role of making responses to unsolicited proposals from the scientific and educational community. There is a growing feeling, however, though not equally shared by members of our group, that this response mode may not serve to uncover all of the most genuine and pressing national needs. Our review group, after considerable debate, showed a consensus in favor of joining others in calling upon the NSF to perform comprehensive needs assessments on a regular basis. We debated whether to suggest how this should be done, and decided that this should be left for the present to NSF deliberation and decision. Several of our members asked that we state clearly and firmly that in calling for a needs assessment program, we are not at all suggesting a lessening of NSF openness to unsolicited proposals, which up to now have been the genesis of much of the recent remarkable scientific advances. Continuing the traditional access for unsolicited proposals and adding a needs assessment program should produce even better results, particularly in meeting the science education needs of our nation.⁶

IC. The absence of parent input into MACOS and other NSF curriculum projects has been noted by many. Since parents through their children are the "consumers" of curriculum products, their concerns and expectations should be in the forefront, along with their children's educational development, at perhaps all but the very earliest stages of the development of a new curriculum. That the initial ideas and earliest work should be done by the professionals and be subject to the review of peers, we agree; but we believe that representative parents should be involved as the curriculum matures, and that, at least by the time it enters pilot-testing, parents should be a part of the continuing review and evaluation process and continue to share that responsibility for

⁵See also Addendum.

⁶One member calls for a system of announcements of areas or topics, sums available, and periodic closing dates as a means of ensuring true competition.

at least as long as federal funding is involved. Parent input may be of little help in such curricula as physics, chemistry, and mathematics; but such involvement is a matter of paramount concern in every curriculum that is "value-laden" or that impinges upon widely respected customs and long-held religious beliefs. The contribution of parents serving on reviewing teams as parents only, innocent of professional and scholarly bias, might have served to alert those responsible for MACOS to potential stumbling blocks to its wider acceptance, for the applications of science, particularly the social sciences, are inseparable from people's beliefs, from their theology, from their morality. MACOS, purposely so open-ended as to allow no hints of patriotism, theism, creationism, or other explicit values, has left itself open to the allegation that it is actually promoting implicitly an evolutionary and relativistic humanism. Thus, impact becomes more crucial than content. It is likely that none is better able to sense the close-range impact of a curriculum upon a child than is a thoughtful and well-informed parent.

ID. In our conversations with NSF staff and in reading the report of the NSF Internal Review Team, we were disappointed to find numerous examples of disjunctions of NSF policy and practice, incompleteness of policy statements, belated attention to policy development, and an impression that policy formulation and updating have not been a strong point of the NSB and the NSF staff. The working responsibility for adequate and consistent attention to policy lies with the NSF Director and staff. Though the part-time status of board members and their rotation prevents them from the unremitting attention necessary, even the Board must seek to be aware of policy gaps and procedural lapses. Our review group recommends that the entire policy structure of the NSF, especially as regards pre-college science curriculum activities, be examined by the Board for gaps and outdatedness, and that strict attention be given to adherence to policy by all staff members, with extra attention to the special needs that arise when staffing changes occur.

ID1. Our committee gained a clear impression, though without complete examination of the evidence, that staff monitoring of projects is inadequate. Perhaps more staff are needed, perhaps better use of staff, perhaps both. But first of all the NSF must consider and develop a policy on project monitoring.

ID2. We found little evidence of active and continuing project evaluation by staff, and we noted apparent severe deficiencies of objective evaluations by outsiders. The only significant evaluation of MACOS thus far available was commissioned by the developers and cannot be viewed as an outsider's evaluation. It does appear that the NSF has recently (and we think belatedly) authorized an outside evaluation of MACOS, but the results will not be available for about three years. Schedules of expected outside evaluations should be made a definite part of curriculum implementation plans.

ID3. While our review group was not unanimous that the NSF should continue to engage in curriculum implementation (that is, some members wanted NSF funding to continue only to the point of completing the development of curricula, without engaging in any subsequent facilitation), all members were agreed that, if there are indeed to be federally-funded curriculum implementation activities, then the duration of those activities should have definite limits and not simply stretch out year after year. We find it not unreasonable to expect that a new and promising curriculum that has survived the pilot-testing program should need and deserve some assistance in bringing it fairly quickly to the attention of large numbers of teachers and administrators, but neither is it unreasonable to expect that it should soon be able to make its own way if it is a truly good curriculum. Therefore our review group recommends that NSF adopt and adhere to a policy of limiting the duration of implementation support, such policy to be effected through clear schedules of phase-out and termination. The need for this policy seems apparent in the light of the extremely long and still continuing outlay

of implementation monies for the MACOS curriculum.

ID4. The developers of MACOS encountered great difficulty and long delay in finding a publisher for the MACOS materials. In the process, more than 50 publishing houses were invited to discussions concerning the publication aspect of the curriculum, and most responded by attending briefing sessions. But none was willing to publish at that time, giving as their reasons, variously, that the publication "package" of films, film strips, booklets, and manuals would have to be priced above the going market; that the materials contained controversial elements; that the requirement of special teacher training was too expensive, etc. After many months several publishers did show an interest and from these the developers selected two for final discussions. One of these, a fairly new organization, was chosen. It apparently was given a contract under terms more favorable than had been discussed with the other finalists, and this seems non-standard to our review group, leaving the parties open to suspicion of favoritism. It also raises questions of adequacy of NSF policy. And while our review group would not insist that every publication contract be like every other, in perfect uniformity, we find no reassurance in a policy which allows the wide latitude present in the MACOS publishing contract.

ID5. The long history of the implementation program for MACOS includes conferences involving administrators, teachers of teachers, and teachers. Internal documents show that a new marketing concept involving these professionals in the place of the usual "book salesmen" was the goal, and in these documents, implementing MACOS comes through as a stirring challenge, almost a crusade. We can understand the enthusiasm of staff members for the curriculum and the desire to see it become an outstanding success. The cumulative effect, however, via supervisors and administrators in particular, may have been to bring undue influence upon local decisions to adopt MACOS. Our review group believes that present NSF policies do not sufficiently spell out the proper limits or guidelines to implementation so as to avoid even the appearance of exercising such undue influence.

IE. The MACOS printed materials do not include the required NSF acknowledgment and disclaimer statement. Apparently the current statement is the result of staff elaborations of a 1969 board-adopted statement and was developed after the 1970 first commercial publication of MACOS. In the ensuing time the NSF staff has not effectively communicated this new requirement to the MACOS developers and publishers, who first learned of it, they reported, during their session with our review group. We believe the Board should put its stamp of authority upon such an important statement and cause it to be enforced.

IF. The matter of royalties deriving from federally-funded projects, in the NSF and in other agencies, should receive the attention of the Congress, looking toward the establishment of a clear congressional policy to guide federal agencies into consistent practices. This would assist the NSF in establishing a more consistent view toward royalties produced by NSF-funded curricula and cause it to require an orderly handling and disposition of such revenues. Present NSF handling of royalties seems inconsistent and not a full and fair accounting.

IIA. We recommend an early phase-out and termination of all MACOS implementation activities except for regular NSF processes of information dissemination and training programs in which more than a single curriculum is offered. The latter would probably be sufficient to help prepare new teachers coming into service and to inform decision-makers as to various options that are available.

IIB. While our review group did not delve deeply into the chronology, the terms, and the results of the MACOS publishing agreement, we are of the opinion that the agreement and especially its royalty provision should be renegotiated. (In view of the extensive GAO inquiry into this matter, our group decided to couch this recommendation in a positive but general form and not hold up our report until the final results of the GAO review are known.)

IIC. When the NSF Board has formally adopted an acknowledgment and disclaimer clause, it should, in our judgment, require that the statement be included, perhaps via overprinting or the use of gummed labels, in all MACOS materials sold after the earliest date at which the publishers can comply with the requirement without serious financial damage. That the present materials, dated 1970, do not contain the disclaimer is apparently not the fault of the publishing company. Yet the presence of the disclaimer in the materials is important to NSF and should be insisted upon.

IID. Only a patient, skilled, and perceptive teacher can handle value-laden materials and topics in such a way as to avoid telling the student what he should think, to cause the pupil to think for himself, and to cause the student to respect his own views, his parents' views, and the views of others. A course such as MACOS confronts the unsophisticated, malleable, pre-pubertal youngster with an array of some of the most painful decisions mankind ever faces. We compliment the MACOS developers for insisting on special training of every MACOS teacher. We also compliment those teachers who, according to reports, handled the course to the great benefit of their students. But because other reports cited teacher, pupil, and parent distaste and frustration, we read the teacher manuals with care and with special attention to whether the materials offer sufficient reminders and cautions concerning teacher handling of value systems that conflict with the implicit and explicit values present in many, many American homes. We did not find enough of these cautions. We believe the material should receive added emphasis regarding the importance of handling diverse views constructively.

IIE. From reports reaching us, we believe that the surest success of MACOS has come in those schools where ample preparations were made, including conferences with parents to show them in advance the MACOS materials and to explain the purposes and methods of the course. Conversely, we have heard stories of teachers or schools that would not let inquiring parents even see the MACOS materials. We believe that some parents who feel their students have been trapped into taking MACOS would have been more receptive if they really had an option between MACOS and some other course or activity. It appears that the MACOS developers all along have favored previews for parents and that they sometimes counsel the larger schools to provide two courses from which parents may choose. Our committee urges the developers and publishers to consider ways of more strongly suggesting and facilitating parent preparation conferences and school provision of live options.

End of report and commentary.

One addendum follows on the next pages.

See also a dissenting report, ~~was~~ attached.

Addendum

The undersigned have joined their colleagues in the Review Group in the "Recognition that the NSF and the Congress cannot avoid responsibility for both quality and content of curricula that are federally funded through NSF." To that statement and the commentary on it in our report we append the following specification of our views as to the nature of this responsibility and its fulfillment by the Legislative and Executive branches of the Federal Government.

The voting public, we believe, holds the two branches of the Federal Government responsible for securing the development of new science curricula of authentic content and high quality in return for the expenditure of tax funds. Congress should not and, as a practical matter, could not burden its membership with the responsibility for evaluating content and quality. Nor would Congress want to delegate to any agency of the Executive the enormous power over the nation's schools implied by the centralization of such responsibility in the Federal Government. The 25-year history of the science curriculum reform movement shows, on the contrary, that Congress has employed the NSF as its bursar to place that responsibility where it belongs: in individuals and institutions outside the Federal Government in the scientific and educational communities.

Standards of authenticity and excellence have been set in each of the 53 science curricula funded by NSF by groups of scientists and educators qualified to render such judgment in the field concerned. The NSF activity in curriculum reform has thus been validated by essentially the same peer-review procedures that have guided the NSF funding of basic research. In curriculum reform, peer review has served not only to mobilize the best qualified judgment of content and quality but also to insulate the locally controlled schools from the Federal Government. The authority of the peer group is different from the authority vested in a government agency. It does not carry any coercion to the decision-making of local school authorities; they remain free to accept or reject the curriculum validated by a peer group. Peer review thus fosters the pluralism essential to self-government.

Congress and the NSF must see to it, of course, that the peer-review groups to which they have delegated their ultimate responsibility are recruited to render representative, authoritative, honestly critical and objective judgments. Considering the importance of this novel institution in the disbursement of public funds for scientific research and education, all concerned should be reassured by the knowledge that the House Committee on Science and Technology is now engaged in a searching review of peer review.

Not surprisingly, the practical considerations that commend peer review as the link in the sensitive relation between the Federal Government, on the one hand, and research and education, on the other, comport well with the restraints on the Federal power exerted by our Constitution and traditions. The plain language of the First Amendment has been taken by the courts to mandate the

neutrality of government with respect to the content of what is taught in the schools.* The jealous vigilance of local school authorities has long defended their "total responsibility for adoption of curriculum materials." Only the rising urgency and cost in our time of the increase and dissemination of knowledge have brought substantial flow of Federal funds into research and education. The Legislative and Executive branches of the Federal Government must narrowly define and fulfill with care the new responsibility they have had to assume for the content and quality of instruction in the nation's schools.

Gerard Piel
James H. Zumberge

*See Shelton v. Tucker; Epperson v. Arkansas; Williams v. Board of Education, County of Kanawha.

MINORITY REPORT
OF
JOANNE MCAULEY
Including Dissenting and Additional Views

TO ACCOMPANY THE REPORT OF THE
SCIENCE CURRICULUM IMPLEMENTATION REVIEW GROUP
TO THE
CHAIRMAN, COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
October 20, 1975

SYNOPSIS

CONCLUSION AND RECOMMENDATION:

After careful and thorough consideration of the facts concerning National Science Foundation pre-college curriculum activities, it is my strong recommendation that Congress require the NSF to discontinue its support of all course curriculum development and implementation. (Pages 3-4)

FINDINGS:

- I. The National Science Foundation is supporting "career curriculum innovators" whose objectives go far beyond NSF's legislative mandate to help improve science education. (Pages 4-7)
- II. There never was a Congressional mandate for NSF to promote and market course materials. (Pages 8-11)
- III. National Science Board policies are non-existent or inadequate in NSF course curriculum area in the following categories: (Pages 11-12)
 - A. Needs Assessment
 - B. Parent Involvement
 - C. Selection of Peer Reviewers
- IV. The National Science Board issues statements establishing public policy, which is a power reserved to Congress. (Page 13)
- V. The NSF gives taxpayer dollars to curriculum grantees with no monitoring, checks, or methods for assuring proper accountability. (Pages 13-14)

FINDINGS (cont'd):

- VI. There is no effective independent evaluation of NSF curricula. (Pages 14-15)
- VII. NSF is required by law and its own adopted policies to ensure the scientific accuracy and public acceptance of curriculum content, as well as the well-being of students who will be exposed to it, before such curriculum programs are implemented in school classrooms. (Pages 15-18)
- VIII. The Majority Report of the Science Curriculum Implementation Review Group incorrectly infers that criticisms of "Man" A Course of Study" (MACOS) philosophy, content, and teaching methods are based on elements that are no longer part of the course. (Page s 18-19)
- IX. There is no need for Federal Government intervention in the development and marketing of textbooks and other course curriculum. (Pages 19-20)

MINORITY REPORT
OF
JOANNE McAULEY
Including Dissenting and Additional Views

TO ACCOMPANY THE REPORT OF THE
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TO THE
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CONCLUSION AND RECOMMENDATION

After careful and thorough consideration of the facts concerning National Science Foundation pre-college curriculum activities, it is my strong recommendation that Congress require the NSF to discontinue its support of all course curriculum development and implementation.

This conclusion is based upon my own study of the NSF Report of Science Curriculum Review Team (May, 1975); Education Development Center and Curriculum Development Associates internal documents; witnesses' testimony before our Group; the General Accounting Office preliminary report concerning agreements between NSF, EDC, and CDA; my analysis of all "Man: A Course of Study" (MACOS) materials, films, and the teaching philosophy of MACOS creator Jerome S. Bruner; and conversations with educators in the State of Texas associated with "Man: A Course of Study" (MACOS).

I agreed at first with the Majority opinion that NSF curriculum development be allowed to continue in the physical sciences. However, after a careful examination of the Callaway Gardens Conference Report (October, 1971), funded by NSF and which led to NSF support of the multi-million dollar "Individualized Science Curriculum System" (ISIS) project, I am now convinced that the danger to American education is too great to permit NSF curriculum activities to continue.

NSF's 13-year involvement with "Man: A Course of Study" (MACOS), and more recently with the MACOS curriculum's high school sequel "Exploring Human Nature" (EHN), demonstrates the danger of Federal promotion and implied endorsement of strongly value-laden behavioral programs. NSF's support of these programs, used as "wedges for systematic change" by a nationwide educator network funded by NSF over the years¹, unduly interferes with local school options.

¹
EDC NSF Proposal/Grant No. PES75-01635, "Social Science Curricular Awareness Conference and Implementation Network," p. 13. (This lengthy proposal approved by NSF in January, 1975, is a graphic portrayal of the sophisticated NSF-funded educator promotion and marketing network to disseminate curricula nationwide.)

The 1971 Callaway Gardens Conference, attended by 34 educators and a single NSF official (who later became the NSF ISIS program officer) embarked the Foundation on its current objective of restructuring the Nation's entire pre-college science curriculum with a value orientation in all subjects.

So long as the NSF engages in curricula which are value-laden and subjective rather than objective, such as those elements found in the social sciences, and to the extent that NSF plans to bring the physical sciences into this political/social mode, NSF is using taxpayer dollars to engage in an inherent political act to "politicize" all classroom teaching, and the MACOS controversy will only be the beginning.

The Majority of the Science Curriculum Implementation Review Group failed to take note of this very disturbing recent change in the character and direction of NSF science curriculum involvement. It is this issue which has become the focal point of much public concern, and which must now become the focal point of full Congressional investigation and action.

FINDINGS

I. THE NATIONAL SCIENCE FOUNDATION IS SUPPORTING "CAREER CURRICULUM INNOVATORS" WHOSE OBJECTIVES GO FAR BEYOND NSF'S LEGISLATIVE MANDATE TO HELP IMPROVE SCIENCE EDUCATION.

The National Science Foundation over the last decade has provided tens of millions of dollars to "career curriculum innovators" at Education Development Center (Peter B. Dow), Florida State University (Ernest Burkman), University of California, Berkeley (Robert Karplus), Indiana University (Howard Mehlinger), and elsewhere. In recent years, much of these funds have been spent to help developers implement through sophisticated promotion and marketing techniques value-laden materials with a socio-political orientation designed to replace traditional pre-college teaching materials across the spectrum of the physical and social sciences.

EDC's "Man: A Course of Study" (MACOS) and Florida State University's "Individualized Science Instructional System" are two of the most noted examples of such NSF programs.

"Man: A Course of Study" (MACOS)

MACOS was developed with \$4.5 million from the NSF between 1962 and 1969. The proposal to develop this course resulted from a small private conference of educators at Endicott House, Massachusetts Institute of Technology. The objective of Endicott Conference participants was to create a New Social Science program to replace traditional 5th grade courses in history and geography throughout the Nation. MACOS was intentionally targeted at 10-year-old elementary students with the underlying purpose of giving them a world-view based on cultural relativism and situation ethics before they had developed a good² understanding or commitment to American values and traditions.

MACOS was rejected by 58 publishers of school materials when the program was offered to them in 1969. NSF and EDC therefore arranged special contract terms for Curriculum Development Associates, Inc., of Washington, D.C. to produce MACOS, and funded a university-based educator network throughout the country to get local school commitments to adopt the curriculum and its behavioral teaching methodology.

It is significant that NSF cut the royalty rate required from proceeds on commercial MACOS sales 80 per cent below the norm -- or to an unprecedented 3 per cent -- to make the MACOS curriculum commercially viable. It is disturbing that neither the NSF internal curriculum review team headed by Dr. Robert Hughes, nor the General Accounting Office team that summarized its MACOS inquiry for our Group, could justify this special contract arrangement not offered to any of the original 58 publishers who may have been willing to bid for MACOS production on the basis of this no-loss guarantee inducement.

As with all curriculum programs developed and implemented by NSF, MACOS was conceived and developed by a small group of like-minded educators, and then marketed to school districts throughout the Nation, without parents in those school districts ever having indicated a local need or desire for the program to begin with, or having an opportunity to know the objectives or content of the MACOS curriculum.

In the particular case of MACOS, parents were not forewarned that their children would be subjected to clinical psychological techniques in the classroom, including role-playing, in-depth teacher interviews probing personal and family matters, and open-ended group discussions of complex social and moral issues.

²

"Man: A Course of Study 'Seminars for Teachers,'" Jerome S. Bruner, Toward A Theory of Instruction, Belknap Press, 1966; The Process of Education, Alfred A. Knopf, 1960; On Knowing, Essays for the Left Hand, Belknap Press, 1962. Richard M. Jones, Fantasy and Feeling in Education, New York University Press, 1968.

00017

The Majority Report did not examine the implications of NSF's embarking upon another multi-million dollar EDC venture to develop, promote, and market nationwide a high school sequel to MACOS, "Exploring Human Nature" (EHN).

A clear pattern is evolving among the "career curriculum innovation" centers being funded by NSF, whereby high-cost elementary programs designed to restructure nationwide education methods and objectives are almost automatically followed by equally expensive and far-reaching value-laden programs designed for intermediate and high school students.

The Majority Report hinted at the problem of perpetual federal support for curriculum development and implementation by recommending some limit on Federal support for some projects. But the Majority failed to deal with the problem of the "career curriculum innovation" centers and their growing dominance over the entire U.S. education system.

My extensive review of many multi-million dollar NSF curriculum programs shows that there is a small cadre of curriculum innovators who repeatedly receive Federal support for different programs year after year, and that they frequently participate in each other's conferences leading to new NSF programs and serve on each other's advisory and steering committees.

Most disturbing is the fact that several members of the key NSF Advisory Committee on Science Education, which participated in the internal NSF curriculum review, have a personal interest or involvement in major ongoing NSF curriculum programs, raising a serious conflict-of-interest situation that neither the NSF internal review team, the General Accounting Office, nor this Group have seen fit to question or explore.

Realizing the responsibility placed upon me by the Congress, I felt it incumbent upon me after hearing testimony before the Group to research further this conflict-of-interest question. My independent research of basic documents led me to uncover the startling revelation that two former members of the National Science Board were formally associated with Education Development Center (or its predecessor organization Elementary Science Study (ESS)) as sitting members of the Board while EDC was receiving NSF funds for curriculum projects.

This whole area of conflict-of-interest in NSF curriculum programs needs a thorough investigation by the Congress.

"Individualized Science Instructional System" (ISIS)

Florida State University's ISIS project is another graphic example of value-laden materials designed for nationwide promotion and marketing with NSF support. It is the high school successor to the multi-million dollar "Intermediate Science Curriculum Study" (ISCS), which had the same project director and staff and was completed just as ISIS was initiated and approved by NSF. This demonstrates once again the pyramiding technique of the "career curriculum innovation" centers, made possible by perpetual funding provided by the NSF.

The Callaway Gardens Conference funded by NSF in 1971 provides a classic example of the "career curriculum innovator" in operation. Dr. Ernest Burkman, the ISCS and ISIS project director, brought together a small group of close associates whom he selected and invited to the Conference at taxpayer expense for the purpose of exploring an alleged need for a totally new approach to science instruction for pre-college students. The report on the Callaway Gardens Conference, submitted to NSF in January, 1972, called for development of a high school science curriculum to include 80 to 125 2-3 week minicourses with a value orientation covering all physical and social science subjects, to replace longer traditional high school courses in chemistry, physics, mathematics, civics, economics, and so forth.

Without benefit of any evaluation of the Callaway Gardens Conference Report by an independent group not associated with Burkman, and with no effort to obtain alternative proposals to fulfill the alleged need from anyone other than Burkman, NSF moved within six months after receiving the initial ISIS proposal to approve a start-up \$550,000 grant for the ISIS project.

I have learned that it normally takes NSF on the average six months just to process an ordinary \$50,000 research proposal, let alone a comprehensive extended curriculum project to cost in the millions.

NSF funding for ISCS and ISIS now total almost \$5 million, without any evaluation of the merit or scientific accuracy of the materials. Parents of thousands of children being exposed to these controversial materials have had no input into the decision to fund a national effort to replace traditional curriculum materials and teaching methods with this questionable program. NSF officials told our Group that "local choices" govern use of NSF-funded curriculum programs. But this is empty rhetoric when one fully understands the implied Federal endorsement associated with such NSF funding and the overpowering coercive effect on local options when such a nationwide curriculum promotion and marketing mechanism is geared up to influence school decision-makers.

II. THERE NEVER WAS A CONGRESSIONAL MANDATE FOR NSF TO PROMOTE AND MARKET COURSE MATERIALS.

Our Group found absolutely no Congressional mandate that permits the NSF to fund the type of promotional and marketing activities that have been conducted under the guise of implementation. The question is, did mandates ever exist to allow NSF to use the word "implementation" as a vehicle for supporting the establishment of a sophisticated national marketing system to push Federally-funded curriculum programs?

In spite of the assertion in the House Science and Technology Committee report (No. 94-66, p. 144) accompanying NSF's FY 1976 budget authorization that the Committee has encouraged such implementation activities, a careful review of the complete hearings involving NSF before Committees in both Houses of Congress since NSF became involved in curriculum activities, shows that this assertion is without any basis in fact.

It may be that one or two individual members of Congress have hinted at implementation of course materials to justify NSF's massive funding for development, but neither the Committees themselves nor Congress as a whole has given NSF authority or encouragement to promote such materials, especially in the social sciences area.

There are specific references in hearings since the Foundation got into curriculum funding warning and discouraging NSF from using its influence and Federal funds to promote social science material. In fact, when this subject came up during an appearance by Dr. Alan Waterman, the first NSF director, before Congress, Waterman agreed with warnings that NSF steer clear of endorsing or promoting curriculum. He said that NSF was only interested in assisting with the research portion of curriculum development, and assured Congress NSF would not interfere in any other way.

It has only been in recent years that NSF has become thoroughly entrenched in promoting and marketing curriculum materials, and never with the approval of Congress.

The latest indication that Congress does not want NSF involved in implementation of pre-college curriculum materials came in recent actions in both Houses of Congress over the FY 1976 NSF appropriation. Just prior to that, the Senate Labor and Public Welfare Committee's report (No. 94-111, p. 24) accompanying NSF's budget authorization says the Committee "very strongly disapprove[s] of any attempt to subsidize the marketing or promotion of any such curricula. The Committee wishes to make clear that it does not intend that any NSF developed curricula be rendered a competitive advantage over curricula developed by the private sector."

The Committee ends up warning NSF not to attempt to "in any way influence local districts as to the choice of such curricula."

This statement is buttressed by the June 24, 1975, action of the U.S. House of Representatives, when NSF's FY 1976 appropriation was approved (H.R. 8070), specifically prohibiting the use of any NSF funds to implement elementary and secondary school materials.

The House Appropriations Committee report accompanying the bill (No. 94-313, pp. 35-36) stated in support of the overwhelming House action:

The Committee is greatly concerned about the extent to which the National Science Foundation has supported the promotion and marketing of course curriculum for elementary and secondary schools and the concentration of these activities on courses that have been developed with NSF or other federal support. The Committee recognizes the need to acquaint teachers with new course materials but federal support for activities designed to get high school and elementary school administrators, members of school boards and other curriculum decision makers to adopt curricula developed with Federal funds could lead to the establishment of a single federal standard for education in the various fields of science.

It is significant that one social science course for 5th graders entitled "MAN: A Course of Study" which has stirred considerable controversy because of its value orientation which many parents feel runs counter to western cultural standards has already been implemented in 1,700 schools nationwide. NSF recently funded a grant to the developers of MACOS which announced plans for the further spread of these studies. Regardless of the merits of a particular course of study, the Committee believes that the provision of federal funding for unique education marketing activities tends to give particular courses unfair advantage in the market place and therefore it is of extreme importance that federal intervention in the development of curriculum, and especially in its implementation be fully justified on a course-by-course basis to the Congress and to a broad base of public, educator, and professional organizations and parent groups nationwide.

The Committee is chiefly concerned about courses which are value oriented and which fall in the broad behavioral science category. This includes MAN: A Course of Study, Exploring Human Nature and other courses dealing with political attitudes and moral values. Since the Foundation is currently developing a number of courses in these areas and is in the process of implementing others which have never been reviewed by the Committee in terms of their national need, the Committee has included no funds for the implementation of courses in 1976. This will give the Foundation time to prepare the necessary data and to fully inform the Congress and the public of its intentions and the basis on which it has determined the pressing national need for such course material. It will also give the Congress time to fully evaluate the impact of federal involvement in this field and arrive at effective public policy guidelines for the development and implementation of such materials. This means that no funds are appropriated for implementing courses that were budgeted in the line items for "Instructional Improvement Implementation" in the elementary and secondary school programs.

The U.S. Senate concurred with the strong House prohibition against NSF promotion and marketing of curriculum programs, and included the following statement in the Senate Appropriations Committee report (No. 94-326, p. 63) accompanying the NSF appropriation bill:

The Committee concurs with the sentiment expressed in the House report regarding the controversy surrounding the pre-college science curriculum development program. It is certainly not the intention of the Committee to erect legislative barriers in the path of innovative science curriculum; however, at a time when Federal dollars are scarce and the public is particularly sensitive to changes in the traditional educational curriculum being adopted by school systems, the Committee urges the Foundation to make a commitment to be more responsive and sensitive to the taxpaying parents whose children will be affected by these new, value-oriented social science courses.

In this same vein, the Committee recognizes the fine distinction between "orientation" and "implementation" in the area of science education, but nevertheless shares the House concern that the federal government should not be in the business of marketing curricula developed with tax dollars nor in the habit of funding efforts by developers to do the same. Federally supported curriculum development projects should rise or fall on their merits and the government should not be a party to influencing the school systems' decision to adopt or not to adopt a particular program for its pupils. Therefore, the Committee agrees that no funds should be included in the bill in fiscal year 1976 for the implementation of courses being developed under the "Instructional Improvement Implementation" line items in the elementary and secondary school programs under the general heading of "Science Education Improvement" at NSF.

Thus it is clear that no mandate ever existed for NSF to provide funds to establish elaborate promotion and marketing networks for school materials, or to entice school administrators, decision-makers, and teachers to adopt certain school programs for their school districts.

The Senate Appropriations Committee report also strongly condemned NSF's abusive royalty policy which has allowed EDC and other "career curriculum innovation" centers to use royalty income owed the U.S. Government for its own self-interests in promoting and marketing curricula:

During the course of the budget hearings on the fiscal year 1976 budget of the National Science Foundation, the Committee learned that there is a potential bookkeeping problem connected with the Science Education Improvement program's handling of grantee royalty accounts. Grant recipients in this program receive funds from the Foundation, some of which go toward the production of trial educational materials. These materials are subsequently distributed to trial users and the grantee may charge enough to cover his costs, plus an additional amount to allow him to continue his work. The researchers then may use the income from these materials to produce a second set of educational materials, without having to go back to NSF for continuation grants. Once the materials have been perfected, they are often sold commercially to publishers and the royalties accrue to the grantee, who in many cases is authorized by

NSF to hold onto this income for use to cover further expenses associated with the grant. According to NSF records, the gross income from the sale of trial materials reported by grantees for the period July 1, 1969, to December 31, 1974, was over \$5.6 million and, as of April of this year, over \$1,000,000 is currently being held in royalty accounts by grantees.

What this system does is to allow the grantees to bypass the appropriation process and the grant review process at NSF by permitting the use of this additional money to supplement the initial grant without going through further review by the agency. Furthermore, there appear to be no internal controls at NSF to prevent an unscrupulous grantee from placing the royalty money in an interest-bearing account, converting interest dollars to his private use and returning the principal when there is an accounting. One hopes this situation does not exist, but there should be safeguards to assure complete control over every dollar that is outstanding.

Therefore, the Committee believes that the present system of allowing grantees to hold onto the royalty income generated by the sale of federally-developed educational materials is improper and should be terminated. At the same time, the Committee directs the Foundation to collect all monies being held in such accounts.

The Committee by no means is accusing the Foundation of any impropriety in this matter, but the grantees have been given too large a degree of flexibility. Money held in royalty accounts should be returned to the agency and subsequently to the Treasury. If further grant moneys are needed by the grantees, they should be provided by NSF through the regular channels of funding.

III. NATIONAL SCIENCE BOARD POLICIES ARE NON-EXISTENT OR INADEQUATE IN NSF COURSE CURRICULUM AREA IN THE FOLLOWING CATEGORIES:

A. Needs Assessment

The National Science Board has not required NSF to conduct a "needs assessment" to determine whether new curriculum materials proposed for development warrant federal spending. Such a "needs assessment" should include a demonstrated need by "a broad base of public, educator, and professional organizations and parent groups nationwide," as the House Appropriations Committee report (No. 94-313, p. 35) said was necessary to justify NSF curriculum activities on a course-by-course basis.

Because such a policy does not exist, millions of taxpayer dollars have been spent by NSF to develop questionable courses like the New Math, the New Social Science (MACOS), and many others. The result has been millions of children who appear to be functionally illiterate in math, and woefully ignorant of basic facts in history, geography, private enterprise economics, U.S. government, and so forth.

Because a proper "needs assessment" was never conducted before the MACOS program was funded by NSF, there was no market for it following development and 58 commercial publishers --- all involved in textbook publishing -- rejected the program. This resulted in NSF's massive implementation efforts with several million additional dollars invested to make MACOS fly in spite of the negative marketplace verdict.

B. Parent Involvement

National Science Board policy makes no provision for parent involvement in any NSF decisions to fund curriculum programs destined for ultimate dissemination to their local school districts. The fact that NSF does not even recognize a legitimate role for parents in education decision-making involving Federal funds was borne out in its own internal curriculum review report presented in draft form to our Group and in final form to the House Committee on Science and Technology.

Pointed reference to the conspicuous absence of any reference to parents or their concerns about NSF curriculum programs and activities was made by the House Science and Technology Committee staff in its summary of the NSF report prepared for Congressmen on the Committee. The Committee staff summary stated:

Parents. There is no reference anywhere in the report to the role of parents in curriculum development and implementation. This is particularly notable since the current concern about curriculum content was originally raised by concerned parents.

The lack of a specific NSB policy requiring NSF to obtain widespread parent participation and input to evaluate and approve proposals for NSF funding on a course-by-course basis has thus instituted an elitist approach to NSF education policies and procedures.

Parent involvement should be an integral part of both "needs assessment", NSF's decision to fund particular programs in the first place, and NSF's continuous monitoring and review of a course's development.

Parent involvement might take the form of an NSB or Congressional requirement that NSF include at least 50 per cent non-educator parent representation on NSF education advisory committees and peer review evaluations of particular proposals.

IV. THE NATIONAL SCIENCE BOARD ISSUES STATEMENTS ESTABLISHING PUBLIC POLICY, WHICH IS A POWER RESERVED TO CONGRESS.

Congress should make clear that the National Science Board has absolutely no authority under the law to make public policy in education, or in any other area. This right is reserved to the Congress. The NSB authority pertains only to establishing policies governing the management and operation of NSF, and any policy statement made by the NSB must first be premised upon policies clearly established by Congress.

I was dismayed that the National Science Board promulgated resolutions on June 20, 1975, insisting on NSF's aggressive role in the dissemination of curriculum materials when such NSF implementation activities had been strongly criticized and were currently under review by the Congress. The NSB action could be interpreted as open defiance of the public and Congress.

No creature of Congress, such as the National Science Board, should be permitted to usurp power given the Congress by the U.S. Constitution.

It is clear that the NSB's policy statements of June 20, 1975, were designed to challenge the right of Congress to question or prevent NSF from continuing curriculum promotion and marketing activities in the future.

V. NSF GIVES TAXPAYER DOLLARS TO CURRICULUM GRANTEEES WITH NO MONITORING, CHECKS, OR METHODS FOR ASSURING ACCOUNTABILITY.

NSF monitoring activities in the education area are virtually non-existent. First, and most crucial, is the social science area. NSF is on record as refusing to take responsibility for the content of any course curriculum program. This explains why a course like ISIS can receive more than \$3.3 million from NSF on the basis of only nebulous proposals to devise a program of 80 or more so-called "minicourses" covering the gamut of physical and social sciences -- with no thought given at NSF for justifying the announced ISIS goal of incorporating a value orientation into every single physical and social science course taught in schools throughout the country.

NSF provided \$10,600 for the Callaway Gardens Conference where ISIS was initiated and this value-infusion goal for all courses was promulgated.

NSF's refusal to take responsibility for curriculum content also explains why ISIS continued to be funded, even though reviewers never really knew that explicit sex education material would be a key part of the curriculum, and without regard for obvious parent outcries of protest when they find that their children are being asked in mixed ISIS sex education classes such outrageous questions as:

"True or False. A man with a very large, flaccid penis may have an average-sized erect penis."

Several typical ISIS minicourse topics include "Too Many People," "Learning and Changing Behavior," "Predicting Human Performance," "Packaging Humans," "How Much Energy Do We Need?", and "Birth Control," to give some idea of the strong value-laden bias on the program.

The lack of NSF monitoring in education programs is the clearest illustration we have of NSF's complete abdication of responsibility for the stewardship of Federal funds and its lack of accountability to the American people for controversial -- even offensive -- ideas and subject matter being promulgated in our children's classrooms.

After the expenditure of more than \$3.3 million of Federal funds on ISIS, in addition to objectionable content, the material is still laced with factual errors according to an independent evaluation I solicited from some curriculum experts in Texas.

NSF's way of doing business is certainly in need of improvement, and their monitoring and all other activities should be scrutinized much more closely by the National Science Board and by the Congress.

VI. THERE IS NO EFFECTIVE INDEPENDENT EVALUATION OF NSF CURRICULA.

There is no independent and objective evaluation of NSF curriculum efforts and materials of an ongoing nature by competent outside evaluators. Members of the Group heard from NSF staff that often only the project director -- the NSF grantee -- alone evaluates his own particular effort, in conjunction sometimes with on-site visits by NSF program officers who originally recommended funding and may be reluctant to admit a mistake.

The public reception and resultant controversy over the MACOS program in particular, and the brewing controversy over "Exploring Human Nature" and ISIS, show clearly that independent outside evaluation of NSF curriculum programs is badly needed. NSF is currently funding a major evaluation of MACOS, but the project leader was formerly affiliated with EDC. This is hardly the way to set about obtaining an independent and impartial analysis of a curriculum program.

VII. NSF IS REQUIRED BY LAW AND ITS OWN ADOPTED POLICIES TO ENSURE THE SCIENTIFIC ACCURACY AND PUBLIC ACCEPTANCE OF CURRICULUM CONTENT, AS WELL AS TO SAFEGUARD THE WELL-BEING OF STUDENTS WHO WILL BE EXPOSED TO SUCH CURRICULUM, BEFORE COURSE MATERIALS ARE IMPLEMENTED IN SCHOOL CLASSROOMS.

Both NSF and the Congress should be responsible for the content of school materials developed with Federal funds. This is not censorship. It is protection of the public interest.

There is nothing sacred about what goes into a curriculum program. And there are many reasons why NSF and Congress must be responsible to oversee content to protect the public and represent the will of the people. NSF is buying a product in the course curriculum area. The use of the grant award.

The U.S. Supreme Court specifically held as early as 1942 that it is hardly lack of due process for the Federal Government to control that which it funds.

NSF has completely failed to protect children from emotional damage from NSF-funded curriculum programs. NSF adopted the U.S. Department of Health, Education, and Welfare's "Policy on the Protection of Human Subjects" in about 1971. This policy clearly requires NSF to ensure that no education program will subject students to psychological, social, or other harm. The policy further requires NSF to provide a mechanism for evaluation of the curriculum program at every stage of development to guarantee the protection of individual subjects who will be exposed to it at any time.

MACOS is used with emotionally-disturbed children at the Austin (Texas) State Hospital. Mel Porter, head of the school and a trained psychologist, related to me that he recognized the potential psychological effects of MACOS films and requested the Psychiatric Board to pass on the curriculum before it was used. The Board assessment was that MACOS would have a short-term emotional effect on the children. There are no such safeguards for normal children who use MACOS in public and private schools.

Since several clinical psychologists of repute and others have already come forward to declare that MACOS has traumatized or caused emotional harm to young children exposed to the curriculum, the NSF policy definition of an individual who is "At Risk" and required to be protected from harm by the offending program or activity is noteworthy to our Group's deliberations about the efficacy of NSF curriculum activities and programs. It states:

"At Risk

An individual is considered to be "at risk" if he may be exposed to the possibility of harm—physical, psychological, sociological, or other—as a consequence of any activity which goes beyond the application of those established and accepted methods necessary to meet his needs. The determination of when an individual is at risk is a matter of the application of common sense and sound professional judgment to the circumstances of the activity in question. Responsibility for this determination resides at all levels of institutional and departmental review. Definitive determination will be made by the operating agency. "

I am most disturbed that the Majority Report failed to address this very serious consideration after it had been repeatedly brought to their attention during the Group's deliberations.

This "Policy on the Protection of Human Subjects" is especially relevant to curriculum programs like MACOS, where clinical psychological techniques are used during in-depth interviews by teachers in the classroom, and where behavioral objectives are implicit in the course materials and lessons.

The following statement by Dr. Richard M. Jones, a psychiatrist who participated in the early pilot-testing of MACOS bears out the clinical nature of the course:

"I think we should not feel burdened by thoughts of having perhaps practiced medicine without a license."³

It has been said that most teachers have very little, if any, qualifications to employ such techniques and handle the human dynamics of children generated by MACOS materials and activities. Obviously failure of NSF and local school districts to faithfully execute the NSF's adopted "Policy on the Protection of Human Subjects" could open school officials, teachers, and NSF itself to possible litigation on a massive scale. This would apply to all value-oriented curricula employing behavioral techniques.

³

Richard M. Jones, Fantasy and Feeling in Education, New York University Press, 1968, p. 225.

00028

The basic tenet of the law is that no individual, business, government agency or official can write themselves out of responsibility for actions they have taken (or not taken). Since NSF is a creature of Congress, Congress has ultimate responsibility to ensure that NSF is accountable for all its activities.

How can one make possible the development and implementation of a program which has as its most unique component content, and not be responsible for it? As evidenced by the considerable controversy and extensive review of the MACOS curriculum, the people -- and Congress as representatives of the people -- are holding NSF to account for the content and pedagogy of MACOS.

It is fundamental to the philosophy undergirding our American Constitutional form of representative government that the government and its agencies are servants of the people -- not their masters. The people, in delegating authority to government officials and agencies do not give them the right to decide what is good for the people. Rather the people continue to decide and instruct government what is good for themselves. The people insist on retaining control over the instruments they have created. In this instance, NSF is the agency so designated. Congress is representative of the people, and the authority delegated with the ultimate responsibility along with the courts to enforce law and policy governing NSF. There is no escape from this responsibility.

It is unbelievable that the NSF internal review team was silent in its report on this issue -- and that the GAO excused NSF for failing to protect children from the dangerous emotional abuses inflicted upon them by MACOS materials and teaching on grounds that the NSF protection policy was adopted after MACOS was developed. This position fails completely to recognize that NSF has spent more than \$500,000 promoting and marketing MACOS materials since the policy on protecting human subjects was adopted, and that promotion and marketing activities to put MACOS into still addition classrooms throughout the Nation are still continuing at this time with funds approved by NSF last January.

No effort was ever made by NSF to safeguard children being exposed to MACOS under the terms of the "At Risk" policy. The policy applies to all program activities -- implementation as well as development.

The Federal Government must take responsibility for curriculum developed with taxpayer dollars. And children are entitled to be protected from sociological and psychological experimentation in the classroom when they are a captive audience.

VIII. THE MAJORITY REPORT OF THE SCIENCE CURRICULUM IMPLEMENTATION REVIEW GROUP INCORRECTLY INFERS THAT CRITICISMS OF MACOS PHILOSOPHY, CONTENT, AND TEACHING METHODS ARE BASED ON ELEMENTS THAT ARE NO LONGER PART OF THE COURSE.

It is not correct that criticisms of MACOS philosophy, content, and teaching methods by parents, Members of Congress, and others are based on outdated MACOS materials.

I have very carefully read all MACOS materials given to me as a member of this Group, and obtained other current MACOS materials independently since I was not provided a complete set. I found that negative criticisms are based upon accurate quotations from current materials being used in classrooms throughout the Nation.

I was especially careful to examine every quotation of MACOS materials from the U.S. House of Representatives debate in the Congressional Record of April 9, 1975. I found those quotations to be accurate and not taken out of context. Quotations are reference with the same citations used by Curriculum Development Associates to identify MACOS materials. Citations from "Volumes" refer to teacher materials, which guide the lessons and contain material to be brought out in classroom discussion and in-depth teacher interviews with students. Citations from "Booklets" refer to quotes from student materials.

The argument that material from teacher volumes is not intended for students is specious and intellectually dishonest. This material does come to the attention of students, as evidenced by the free-wheeling classroom discussions published in Jones' Fantasy and Feeling in Education.

The Majority Report notes that MACOS films are silent and concludes that this is a good feature because "The observer can better utilize his own thoughts." This statement is later contradicted in another part of the Majority Report, which states "For 10- and 11-year-olds, some of the Netsilik solutions to what to do when their always-near-marginal food sources disappear could be traumatic, especially if the pupils were inadequately guided by their teachers" [Emphasis added].

Thus the guidance provided in MACOS teacher volumes takes on an important dimension in teaching the course. The teacher guide material is deterministic about what values are desirable, and most often run counter to Western values.

MACOS teacher material is considered so important by EDC and CDA that all schools buying the course are required as a prerequisite for obtaining it to enroll teachers in a special month-long training course run only by EDC and CDA or NSF grantees. At this training course, teachers learn how to use the materials effectively to achieve desired results in the classroom. Netsilik material in teacher volumes is an essential and integral part of the MACOS curriculum, duplicating or expanding student material. There is no question that this material is used extensively to justify for students the deterministic lifestyle and moral relativism of this Eskimo subculture.

In checking inferences that MACOS quotations in the April 9, 1975, Congressional Record came from earlier, outdated MACOS sets, I found that materials from which the quotations were taken were provided by NSF to the House Science and Technology Committee. They were purchased by NSF from CDA, the MACOS publisher, in February or March, 1975, and so are quite current. The argument that outdated material may be responsible for "misunderstandings" is therefore not valid. This could not be so, unless the publisher and NSF are purposely still distributing MACOS materials different from those being used throughout the Nation.

IX. THERE IS NO NEED FOR FEDERAL INTERVENTION IN THE DEVELOPMENT AND MARKETING OF TEXTBOOKS AND OTHER COURSE CURRICULUM.

The capabilities of commercial textbook and education firms have improved dramatically over the past 15 to 20 years. The arguments for continued massive infusions of Federal dollars for the development and implementation of school course materials are no longer valid. Many large and small companies have entered the field, and have the necessary risk capital to undertake \$5 million projects or even larger undertakings in the curriculum area.

Incentives for commercial firms to undertake such efforts will never be great so long as the Federal Government insists on nursing the "career curriculum innovation" centers. And the Nation will continue to suffer from multi-million dollar "innovations" such as the New Math, the New Social Sciences (MACOS), and other equally questionable courses concocted in Government-funded academic "think-tanks."

It is time for the Federal Government to acknowledge the vast capabilities of commercial firms in the private sector to do the education curriculum job without Federal interference.

I have found in my discussions with parents and taxpayers across America that this is the prevailing view, and I strongly urge Congress to terminate unwanted NSF curriculum activities.

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